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VALUATION: A COMMENT

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TOWARD A MODEL FOR HUMAN RESOURCE VALUATION: A COMMENT

In a recent issue of The Accounting Review, Bikki Jaggi and Hon-Shiang Lau, hereafter J and L, (1974, pp. 321-29) evaluated human resource valuation models developed by Lev and Schwartz (1971) and Flamholtz (1971), and presented a new model based on "the actuarial concept of homogeneous group and Markovian analysis." The purpose of this paper is to briefly comment on their interpretation and evaluation of the previous models referred to above and to point out a number of conceptual and practical problems that may reduce the usefulness of their model.

INTERPRETATION AND EVALUATION

Before evaluating the Lev and Schwartz and Flamholtz models for human resource valuation, J and L summarize what they perceive to be the essence of these models. According to J and L, the Lev and Schwartz

model relates an employee's expected economic value to the firm (emphasis added) to his future earnings from his active service life. His discounted future expected income stream represents the present value of his services (1974, p. 321).

The Flamholtz model

is also (emphasis added) focused upon the measurement of an employee's value to a firm. In this model the value is determined by multiplying the expected quantities of services of

employees in each service state with the corresponding probabilities of an individual occupying these service states in the forthcoming period of time (1974, p. 321).

Apparently, J and L believe that the Lev and Schwartz and Flamholtz models have the same objective, namely, measuring the economic value of employees to the firm employing them. However, nowhere in the development of their model do Lev and Schwartz (1971) make any reference to measuring the economic value of employees to the firm employing them. Rather, they indicate that they are attempting to measure the human capital value associated with the firm. These are very different objectives. According to Morse (1973, p. 590), the concepts of "human assets" and "human capital" are not alternative ways of viewing human resources. They are complementary and each is concerned with a separate aspect of the total human resources employed in a firm.

Human asset accounting is concerned with determining the value of the human resources employed in the organization to the organization. Human capital accounting is concerned with determining the value of the human resources employed in an organization to the employees of that organization (Morse, 1973, p. 593).

The Flamholtz model is concerned with measuring human assets. The Lev and Schwartz model is concerned with measuring human capital.

After presenting their summarization of the Lev and Schwartz and Flamholtz models, J and L present three standards that "are commonly used in the evaluation of most models (J and L, 1974, p. 321)." Commonly used by who? J and L do not refer to any previous application of these standards. Never-the-less, the criticisms J and L make of these models, using

their standards, are pertinent. Indeed, the Lev and Schwartz model "ignores the variables of career movements of the employees within the firm and the possibility of employees' leaving the firm before their retirement or death," and the Flanholtz model falls short of "practical value" because of difficulties encountered in subjectively estimating the probabilities that each employee will occupy each service state during each of n periods. There are also problems with the magnitude of the statistical variance in any resultant valuations of individuals (J and L, 1974, pp. 322-323).

J AND L's MARKOV MODEL

Completing their evaluation of previous human resource valuation models, J and L present a new model that allegedly incorporates the important factors they believe are absent in the earlier models. Their model incorporates data on the historical movement of groups within an organization into a "Rank Transitional Matrix" (a transition probability matrix) and uses this matrix to predict the future career movements of groups currently within the organization. The value of the services rendered the organization by its current employees in a future period is computed by multiplying the model determined estimate of the number of current employees that will be in each rank in that period by the value of the services an employee in each rank renders the organization. The value of the services rendered the organization in n periods is determined by computing the value of the services rendered the organization in each of the n periods and summing the results. The essence of their model is presented in their equation (7) (J and L, 1974, p. 327). It is reproduced below in equation (1).

$$[TV] = [N] \cdot \sum_{n=1}^{\infty} r^n [T]^n [V] \quad (1)$$

where:

TV = column vector indicating the economic value of all current employees in each rank;

N = column vector indicating the number of employees currently in each rank;

n = time period;

r = discount rate;

T = Rank Transitional Matrix indicating the probability that an employee will be in each rank within the organization or terminated during the next period given his current rank; and

V = column vector indicating the economic value of an employee of rank i during each period.

On page 324, J and L indicate that their model assumes that the pattern of movement within ranks is likely to remain constant and on page 328, they suggest that the data necessary to complete the Rank Transitional Matrix "can be easily deduced from the historical personnel records usually available in a well organized firm." These two statements are of questionable validity and are likely to limit the usefulness of their model. As a minimum, the issues of stability and information availability need to be labeled as potential limitations of their model. The authors would have performed a service if they had indicated the circumstances under which the matrix would be stable and the information necessary to use their model might be available. It is likely that only "large," "stable" organizations will meet these criteria. A "small" or "expanding" organization will not be able to fill in all of the cells in the Rank

Transitional Matrix, or may find the numbers in these cells changing dramatically from period to period.

The problem of data availability is a much more serious one than J and L seem to realize. If the pattern of movement within ranks is changing from period to period it may be difficult to determine how much historical data can be used. More importantly, personnel departments do not maintain the records needed to easily accumulate the necessary probabilities. In a recent study, Berg (1970) found that most firms do not keep the records necessary to complete a "Rank Transitional Matrix." Based on conversations with personnel officers in a number of major accounting firms, this author concludes that even they do not maintain the necessary records. This is not to say that such records should not be kept, but merely to point out that difficulties in obtaining the necessary information may cause J and L's model to fail their second standard, data availability.

J and L's model also assumes that the economic value of an employee of rank i remains the same in each future period under consideration. This is unlikely to be the case. It is difficult enough to predict future employment costs, let alone the future revenues to be generated by employees. Not only does J and L's model require predictions of both well into the future, it assumes they do not change. It is questionable whether such an assumption is any less subjective than the predictions required by Flamholtz's model.

Finally, J and L cannot fully operationalize the model represented by equation (1) even if all of the problems mentioned above can be overcome. The model extends over an infinite number of periods and the way

it is formulated requires an infinite number of calculations. To overcome this difficulty, J and L suggest that the model be extended only 40 periods into the future because "the extension of the valuation horizon from 40 periods to a longer horizon (i.e., 50 periods, 60 periods, etc.) will not change the value materially (J and L, 1974, p. 328)." What is materially? J and L do not say. It does not make much difference in any event, because TV can be computed exactly by means of a mathematical formulation that J and L appear to have overlooked.

The same technique that Cyert, Davidson, and Thompson (1962) used to estimate the allowance for doubtful accounts by the use of Markov chains may be used to estimate the economic value of all current employees to the organization. The key is to limit the Rank Transitional Matrix to movements within the organization and compute a fundamental matrix that indicates the average number of periods an employee will spend in each rank given his current rank. The formula necessary to compute the fundamental matrix is:

$$(I - T)^{-1}$$

where:

I = identity matrix of the same order as T.

With a zero time value of money, the total economic value of all current employees to the firm may now be computed as:

$$[TV] = [N^T] [I-T]^{-1} [V] \quad (2)$$

where:

TV = total economic value of all current employees; and

N^T = row vector indicating the number of employees currently in each rank.

If consideration is given to the time value of money (Cyert, et. al., 1962, p. 294), the total economic value of all current employees to the firm may be computed as:

$$[TV] = [N^T] [I-rT]^{-1} [V] \quad (3)$$

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